AMENDMENTS TO THE SPECIFICATIONS

V. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, where the present invention is generally referred to with numeral **10**, it can be observed that it basically includes housing **20**, wound conduit assembly **40**, inlet **44** and outlet **46**. In operation, a fluid to be processed (typically containing small particles or vaporized liquids in suspension) enters inlet **44** and exits through outlet **46**. One of the advantages of this invention is that it lends itself to be used in a continuous system, such as for treating the exhaust gases produced by an internal combustion engine.

As seen in figure 1, housing **20** has a substantial cylindrical shape with a concave bottom **22** including an opening **23** in its lowermost point. Wound conduit assembly **40** is mounted inside housing **20**.

Wound conduit assembly **40** includes a serpentine conduit member **42** with outermost wall portion **43**. Serpentine conduit member includes inlet **44** and outlet **46**. Outermost wall portion **43** has a plurality of through openings **47**. In the preferred embodiment, openings **47** are formed at an angle to facilitate the exit of the heavier matter contained in the gas mixture, as best seen in figure 2. Inwardly extending portion **48** directs particles that pushed outwardly by the centrifugal force to enter opening **47**.

The present invention can be implemented with different means for applying a pressure differential between inlet **44** and outlet **46** so that the fluid entering inlet **44** is forced through serpentine conduit member **42** and

out through outlet 46. The heavier matter contained in the fluid is forced radially out through openings 47 by the action of the centrifugal forces. In this manner, the resultant fluid that exits through outlet 46 is free of the heavier particles and/or liquids. The pressure differential can be enhanced with the application of a pressurized second fluid (such as air) through inlet 44 that causes the fluid being processed to speed up through member 42.

The centrifugal force acting on the solids or heavier mater suspended in the fluid is represented with the following equation $F \; V^2/R$ where V is the velocity of the fluid and suspended heavier matter and R is the radius of curvature.

In the embodiment shown in figure 1, the heavier matter passing through openings 47 is collected at bottom 22 passed through 23 for disposal or further processing.

One of the applications for the present invention is with internal combustion engines. The exhaust gases typically contain particles and oil vapors in suspension. Other industrial applications make also desirable separating solids/liquids from fluids (liquids or gases), such as environmental, pollution control devices and others. Forcing the exhaust gases through serpentine conduit member 42 causes a centrifugal force that is proportional to the square of the to rotational speed at which the exhaust gases are traveling. The higher the pressure differential with respect to outlet 46, the faster the gases will travel and the higher the magnitude of

the centrifugal force. Also, the larger the radius of curvature of the wound conduit members, the smaller the centrifugal force.

Applicant has found that using a coil of 6.4 cm. in diameter for the wound conduit member and with a conduit member having an inner diameter of 1 cm., the pressure provided by typical internal combustion engines has been sufficient to impart the necessary speed to the fluid for the present invention to work.

Another application would be the use of the invention in polluted areas such as industrial smokestacks. In these applications, the polluted air can be compressed and injected to inlet 44 or alternatively a negative pressure is applied to outlet 46 to suck the polluted air.

One other possible application contemplates the use of the invention with pressurized gases, such as air, to separate water vapors and other particles.

Still another application involves a liquid fluid, such as oil, with small solids in suspension. The oil can be engine transmission oil, for instance. The liquid is forced through inlet 44 in a similar fashion as discussed above.

The foregoing description conveys the best understanding of the objectives and advantages of the present invention. Different embodiments may be made of the inventive concept of this invention. It is to be understood that all matter disclosed herein is to be interpreted merely as illustrative, and not in a limiting sense.